

Listing Of Claims:

This listing of claims will replace all prior versions and listings of claims.

1. (Original) An integrated amplified telecoil system, comprising:
a telecoil for producing an electrical output signal in response to electromagnetic radiation;
a first amplifier receiving said electrical output signal and having a first amplifier output producing a first amplified signal; and
a first filter having a selected pass band in an audio frequency range integrated into an integrated circuit with said first amplifier, said first filter coupled to said first amplifier output for receiving said first amplified signal and having a first filter output producing a first filtered signal.
2. (Original) The system of claim 1, further including a second amplifier integrated onto said integrated circuit with said first amplifier and said first filter, said second amplifier receiving said first filter signal and producing a second amplified output signal.
3. (Original) The system of claim 2, wherein said second amplifier is a signal processor.
4. (Original) The system of claim 1, further including a second filter on said integrated circuit and having a pass band different from said selected pass band of said first filter, said second filter receiving said first amplified signal and producing a second filtered signal.

5. (Original) The system of claim 4, further including a third amplifier for receiving said second filtered signal and producing a third amplified output signal.

6. (Original) The system of claim 5, wherein said third amplifier is realized as a signal processor.

7. (Original) The system of claim 1, wherein said telecoil is a center-tapped telecoil for producing two electrical output signals received by said first amplifier.

8. (Original) A method of operating a listening device, comprising:
converting electromagnetic radiation to electrical signals;
amplifying said electrical signals to produce first amplified signals; and
filtering said first amplified signals in an audio frequency range to produce first filtered signals, wherein said amplifying and said filtering are performed on a single integrated circuit.

9. (Original) The method of claim 8, further including amplifying, on said single integrated circuit, said first filtered signals.

10. (Original) The method of claim 9, wherein said amplifying said first filtered signals includes processing said first filtered signals.

11. (Original) The method of claim 8, further including filtering, on said single integrated circuit, said amplified signal with a pass band different from the pass band of said first filtering to produce second filtered signals.

12. (Original) The method of claim 11, further including amplifying, on said single integrated circuit, said second filtered signals.

13. (Original) The method of claim 12, wherein said amplifying said second filtered signals includes processing said second filtered signals.

14. (Original) The method of claim 8, wherein said converting is performed by a center-tapped telecoil.

15. (Original) A telecoil system for a listening device, comprising:
a telecoil for producing electrical output signals in response to being exposed to an electromagnetic field; and
an integrated circuit receiving said electrical output signals, said integrated circuit including an amplifier providing amplified electrical output signals and a filter for passing selected signals from said amplified electrical output signals, said selected signals being in a range from about 20 Hz to about 10 kHz.

16. (Original) The telecoil system of claim 15, wherein said telecoil is a center-tapped telecoil producing two electrical signals to be differentially processed by said integrated circuit.

5/17/03
17. (Original) A telecoil system for a listening device, comprising:
a telecoil for producing electrical output signals in response to being exposed to an electromagnetic field, said electrical output signals including an audio frequency signal and a non-audio frequency signal; and
an integrated circuit having an amplifier for amplifying said electrical output signal, a first filter for passing said audio frequency signal, and a second filter for passing said non-audio frequency signal.

18. (Original) The telecoil system of claim 17, wherein said electrical output signals further include a second non-audio frequency signal and said integrated circuit includes a third filter for passing said second non-audio frequency signal.

19. (Original) The telecoil system of claim 17, wherein said telecoil and said amplifier are coupled differentially.

20. (Original) The telecoil system of claim 17, wherein said telecoil and said amplifier are coupled in a single-ended fashion.

21. (Original) The telecoil system of claim 17, further including electrostatic discharge protection circuitry.
22. (Original) The telecoil system of claim 17, further including electromagnetic interference protection circuitry.
23. (Original) The telecoil system of claim 17, further including an analog-to-digital converter for providing a digital output of said audio frequency signal.
24. (Original) The telecoil system of claim 17, further including an analog-to-digital converter for providing a digital output of said non-audio frequency signal.
25. (Original) The telecoil system of claim 17, further including a microcontroller for processing said non-audio frequency signal, said microcontroller providing functions for the operation of said hearing aid in response to said non-audio frequency signal.
26. (Original) The telecoil system of claim 17, further including a capacitor connected in parallel with said telecoil for increasing the sensitivity of the telecoil to the non-audio frequency signal.
27. (Original) The telecoil system of claim 17, wherein said telecoil is a center-tapped telecoil producing two electrical signals to be differentially processed by said integrated circuit.

28-43. (Withdrawn)

44. (Original) A method of operating a listening device, comprising:
converting electromagnetic radiation to an analog electrical signal with a telecoil;
receiving said analog electrical signal in an integrated circuit;
amplifying, in said integrated circuit, said analog electrical signal to develop an amplified
analog signal;
converting, in said integrated circuit, said amplified analog signal to a digital signal; and
processing, in said integrated circuit, said digital signal into at least two digital outputs,
one of said at least two digital outputs being an audio and frequency band output.

45. (Original) The method of claim 44, wherein another of said at least two digital outputs is
a control band frequency output, and further including operating said hearing aid in a certain
manner corresponding to said control band frequency output.

46. (Original) The method of claim 44, wherein said converting is by an analog-to-digital
converter operating at a high rate to gather high-frequency signals.

47. (Original) The method of claim 46, wherein said rate is about 1 MHz.

(48.) (Original) A telecoil system for a listening device, comprising:

a telecoil for producing electrical output signals in response to being exposed to an electromagnetic field, said electrical output signals including an audio frequency signal and a non-audio frequency signal; and

a hybrid circuit including at least one integrated circuit placed on a common miniature device that fits within a hearing aid, said hybrid circuit having an amplifier for amplifying said electrical output signal and at least one filter for passing said audio frequency signal.